

Start Smart Eating & Reading

★ A fun-filled breakfast, nutrition, and reading program for 1st and 2nd grades ★

Module Five: Milk & Movement for Mighty Bones

Lesson Overview

This lesson focuses on the roles that both calcium-rich dairy foods and physical activity play in building strong bones. Through reading and discussion of *A Fairy in a Dairy*, children learn that there are a variety of foods made from milk.

After the story/discussion, children can participate in one or more activities, including a no-cook food activity, a fun dance/movement exercise (*Dance the Dairy Beat*), and work on *My Bone-building Book*, an 8-page rhyming booklet with a variety of learning activities. Finally, the children can apply these concepts as they track their daily breakfast habits.

Objectives

Children will:

- Discover that milk and foods made from milk provide calcium for building bones and teeth.
- Identify foods that belong in the Milk Group.
- Participate in activities that reinforce the importance of both calcium and physical activity in building strong bones.
- Keep track of daily breakfast consumption.

What You Will Need

To teach and supplement the lesson

1. Teacher/Leader Resource Page (pp. 5–8)
2. *A Fairy in a Dairy*, by Lucy Nolan (© 2003, Marshall Cavendish)
3. Breakfast Every Day! classroom poster
4. Breakfast Mix-n-Match game cards ⌚
5. Reproducible handouts
 - B-R-E-A-K F-A-S-T! Rap / Let's Eat Breakfast ⌚
 - For Your Breakfast ⌚
 - Breakfast Song ⌚
 - Dance the Dairy Beat ⌚
 - My Bone-building Book ⌚
 - My Breakfast Every Day individual calendar ⌚
 - "Breakfast Bites" (parent newsletter) ⌚
6. Dance the Dairy Beat song from CD or website
7. Other recorded music: Breakfast Rap, Let's Eat Breakfast, For Your Breakfast, Breakfast Song ⌚

⌚ = As time allows

For the Food Activity (Yogurt-Fruit Parfait) ⌚

- Low-fat (or fat-free) vanilla yogurt
- Low-fat (or fat-free) lemon yogurt
- Low-fat granola cereal, crushed breakfast cereals, or chopped nuts

ATTENTION LEADERS

The best way to teach students the importance of eating breakfast is to model healthy habits. Make a point to mention your own breakfast habits throughout the year. This can be as simple as saying, "I've had my breakfast and I'm ready for the day!"

Some or all of the following:

- Sliced bananas
- Pineapple chunks
- Berries (blueberries, raspberries, or sliced strawberries)
- Peach or pear chunks (fresh or canned)

Equipment/supplies:

- Bowls (for ingredients)
- Serving spoons/utensils for ingredient bowls
- Clear plastic cups (one for each student)
- Plastic spoons (one for each student)

Most importantly:

- Clean hands and a clean work surface!

Teaching the lesson

Before you begin, review the *Teacher/Leader Resource Page*.

Introduce the lesson by asking the children to raise their hands if they ate breakfast this morning. Ask if anyone included milk or a food made from milk in his or her breakfast.

Together, list examples of foods made from milk (e.g., yogurt, different types of cheese, ice cream).

Explain that milk contains important nutrients, including calcium, vitamin D, protein, potassium, and many others. Calcium and vitamin D are important nutrients for building strong bones. In addition, active play is needed to build strong bones.

Children ages 2 to 8 need 2 cups of milk each day. The recommendation for ages 9 through adult is 3 cups daily.

Do

1. Read the book *A Fairy in a Dairy* to the children. After you are finished, lead a brief discussion of the story. Questions you might ask are included at right.
2. Sing one of the songs or raps about breakfast. Use the recorded songs (copy from the website to a CD) and word sheets to help the children learn the song. Two songs have teaching tracks recorded. 🎧
3. Choose one or more of the following nutrition/fitness activities. 🎧

Dance the Dairy Beat

Students participate in a fun dance exercise that reinforces the concept that physical activity and the nutrients found in milk are important partners in building strong bones. Play the song from a CD or the website and display the “Dance The Dairy Beat” master on the overhead projector so children can follow the words as they dance.

REFLECT

A Fairy in a Dairy

Ask the children:

- Who was the “fairy in a dairy” in this story? Why do you think this character became the “fairy in a dairy”?
- Why did Mayor Clabber want to get rid of the dairy farms in Buttermilk Hollow? Did he change his mind by the end of the story?
- What are dairy products such as cheese, yogurt, and ice cream made from?
- How many dairy products can you find in this book?
- Have you ever tasted any of the following cheeses: Swiss, mozzarella, Brie, Muenster, or Limburger?
- Do you know why it’s important to eat or drink dairy products every day? (ANSWER: Milk and foods made from milk have calcium for strong bones. Dairy products also have many other important nutrients such as protein, vitamin D, potassium, and riboflavin.)
- What type of dairy foods are the healthiest? (ANSWER: Low-fat milk (fat-free or 1%), low-fat yogurt, and reduced-fat cheeses)

My Bone-building Book

This 8-page rhyming/activity booklet takes students on a “bone search” in which they learn to identify dairy foods, and they are reminded that activity is also important for a strong skeleton. Copy and assemble the booklets (or ask parent volunteers to do this) as follows: (1) Fold each page across the middle so the top of the page meets the bottom. (2) Fold again so the child’s name is on the outside-front of one folded page and page 2 is on the outside-front of the other. (3) Layer the two folded sections so the page numbers are in correct order, and staple along the center. Give one to each student.

Breakfast Mix-n-Match Cards

Use the breakfast cards to help children identify food from the Milk Group and incorporate them into breakfast choices.

- Play “Memory” with matched pairs of just the Milk cards. See Module 1 for complete directions.
- Have the children make new cards using the blank “Milk” cards master. Children can draw or paste pictures of their favorite food from the Milk group. Be sure cards are labeled with the name of the food.
- Play “Go Get Breakfast” (a version of “Go Fish”) using the Milk cards. Children can match each identical dairy food into sets. See Module 2 for complete directions.
- Play “Complete the Breakfast.” Separate the cards into food groups. Select one card each from the Fruits, Vegetables, Grains, and Meat/Bean groups to represent a breakfast. Ask the children what group they would add for a more complete, healthy breakfast (Milk group). Ask for names of specific dairy foods they could add to make the breakfast complete. Help children understand the concept of choices and variety within the Milk Group.

Choose different cards from the Fruits, Vegetables, Grains, and Meat/Bean groups and repeat the game.

Food activity: Yogurt-Fruit Parfait

1. All children and instructors thoroughly wash hands with warm, soapy water for at least 20 seconds (for the duration of the A-B-C song).
2. Set up a clean table with the ingredients listed in the “What You Will Need” section.
3. Show students how to create their own Yogurt-Fruit Parfait.
 - Give each student a clear plastic cup.
 - Encourage students to spoon a layer of yogurt into their clear cups, followed by a layer of fruit. Repeat with additional layers of yogurt and fruit, depending on cup size. To complete the parfait, suggest sprinkling a spoonful of granola, cereal, or nuts on top.
 - The parfait should be eaten right away, since yogurt is a perishable food.

Apply

Try the following:

- Encourage children to “practice” eating breakfast every day and keep track of their progress using the individual “My Breakfast Every Day” calendar. Keeping records can be a great boost to behavior change.

REFLECT

Yogurt-Fruit Parfait

Ask the children:

- Do you know why it’s important to keep yogurt and other dairy foods in the refrigerator?
- What ingredients did you use in your Yogurt-Fruit Parfait?
- How many food groups did you use in your parfait? Name them.
- Is the Yogurt-Fruit Parfait a recipe you would like to make for breakfast?
- What different ingredients would you like to try next time?

- Fill in students' names and display the classroom poster "Breakfast Every Day!" Explain that you will place a sticker, stamp, or mark by their name for every day they report eating breakfast.
- Ask children to share the "Breakfast Bites" newsletter with their parents and make *Banana-Yogurt Freezer Pops* together at home.

Going further

1. Send home copies of "Breakfast Bites," an activity-based newsletter for parents and children to share.
2. Reinforce breakfast concepts every day with a "60 seconds a day" activity. Some ideas are:
 - Sing one of the songs about breakfast.
 - Discuss the school breakfast menu. Ask students to identify menu items that are made from milk.
 - When your class needs an energy boost, take a minute to **Dance the Dairy Beat**.
 - Ask, "If your family doesn't use dairy foods (or you are allergic to dairy foods), what are some other foods that give you calcium?"
(ANSWER: Examples include calcium-fortified soy or rice milk, calcium-fortified orange juice, other calcium-fortified foods, and foods such as sardines, almonds, and broccoli.)
 - Share an "udderly interesting dairy fact" (at right) with your students.
3. Make stickers on precut peel-and-stick computer labels that share the messages from this lesson, i.e., "Milk Starts the Morning," "Milk & Movement for Mighty Bones!" Give them to the children to wear.

4. More Reading About Eating

There are a number of children's books that describe dairy cows, dairy farms, and milk processing in detail.

Extra Cheese, Please!, by Cris Peterson (© 1994, Boyds Mill Press, Inc.)

From Grass to Milk, by Stacy Taus-Bolstad (© 2004, Lerner Publications Company)

Milk, by Gretchen Will Mayo (© 2004, Weekly Reader Early Learning Library)

Out and About at the Dairy Farm, by Andy Murphy (© 2003, Picture Window Books)

Thanks to Cows, by Allan Fowler (© 1992, Children's Press, Inc.)

The Milk Makers, by Gail Gibbons (© 1987, Aladdin Books)

UDDERLY INTERESTING DAIRY FACTS

Did you know that...

- One cow produces 40,000 glasses of milk each year, enough to make cheese for 1,800 pizzas?
- Milk that is "ultrapasteurized" remains fresh for 45 days?
- Cows are herbivores? They eat foods such as hay, corn, and soy-bean meal.
- There are 350 dairy farms in Oregon?
- Manure from dairy cows can be converted into electricity?

Sources:

Extra Cheese, Please!, by Cris Peterson (© 1994, Boyds Mill Press, Inc.)

<http://www.dairyfarmersor.com>

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Teacher/Leader Resource Page

Milk: Bone-building Nutrients & More!

Milk and foods made from milk are among the most nutrient-dense foods in our diet (1). In addition to bone-building calcium and vitamin D, milk provides protein, B vitamins, vitamin A, potassium, and other key nutrients. For a complete rundown on dairy nutrition, visit “Milk’s Unique Nutrient Package” at http://www.nationaldairycouncil.org/nationaldairycouncil/nutrition/products/Nutrients_in_Milk.pdf

The *Dietary Guidelines for Americans 2005* recommend 3 cups of low-fat or fat-free milk—or enough low-fat yogurt and/or low-fat cheese to provide the equivalent amount of calcium. For kids aged 2 to 8, it’s 2 cups of milk or a calcium equivalent. The guidelines state that if you don’t or can’t consume milk, choose lactose-free milk products and/or calcium-fortified foods and beverages.

In addition to adequate dietary calcium and vitamin D, weight-bearing activities also serve to “exercise” bones and make them stronger. Weight-bearing means your muscles and bones are working against gravity. Activities such as walking, jumping, running, soccer, tennis, basketball, karate and taekwondo are all weight-bearing because feet, legs, or arms are supporting or carrying your weight. (Riding a bike and swimming don’t count as bone-building physical activities, but they are great for helping other muscles—including your heart).

For more detailed information about milk, calcium, and health, please refer to **Calcium and Health Q&A** on page 6.

Teaching Tips

- There are two calendars to track the children’s breakfast. The classroom “Breakfast Every Day!” poster can be posted for everyone to see. Fill in students’ names and explain that you will place a colored mark or sticker by their name for every day they report eating breakfast. Alternately, each child can keep an individual “My Breakfast Every Day” calendar.

The calendars serve two purposes in this program. The most important goal is to motivate and remind children to eat breakfast every day. A secondary goal is to evaluate the impact that this curriculum has on the breakfast patterns of students. To gain data without right or wrong answers, three colors of markers or stickers could indicate whether the child (1) ate at home, (2) ate at school, or (3) is waiting until lunch

LESSON ENHANCEMENT IDEAS

- Host a cheese-tasting party with some common types of cheese (cheddar, Swiss, mozzarella) as well as some less common varieties such as havarti, farmer’s cheese, Edam, Muenster, or Gouda. Cut taste samples into very small pieces and serve with whole-grain crackers.
- Using white cornmeal to represent bone calcium, measure the amount of calcium contained in our skeleton at different ages and stages. Fill zippered clear plastic bags with the following amounts of cornmeal and label:
 1. Newborn baby: ¼ cup
 2. Age 10: 3½ cups
 3. Age 15: 7 cups
 4. Adult: 11 cups
- Play the building block game “Jenga” as an illustration of bone density. Explain that as the blocks are taken out of the game, the structure becomes increasingly weak. This is similar to how bones can lose calcium and become more likely to break.

Oregon Resources

- Take a “virtual tour” of a dairy farm by visiting <http://www.dairyfarmersor.com>
- Watch the video “Moo to You.” Available for loan at: <http://aitc.oregonstate.edu> or call 541-737-8629.
- Invite the Oregon Dairy Princess Ambassador to visit your classroom. To check schedule availability, send an email to: info@oregondairycenter.org

to eat. Use the same colors for the entire tracking period. You can add a key to indicate the meaning of each color.

- Be a good role model! Talk about your favorite calcium sources and how calcium helps to keep bones strong all through life. Even though you can only build bone while you are young, you must maintain calcium intake all through life to prevent loss of bone. Mention the dairy and/or calcium-rich choices that you like to eat for meals and snacks.
- Reinforce breakfast and nutrition concepts in your classroom all year long. Incorporate some or all of the suggested “60 seconds a day” activities into your regular classroom routine.
- **Keep it Clean and Safe.** If you plan to prepare food in your classroom, be sure to handle food safely. Reinforce and demonstrate the importance of hand washing, clean food preparation areas, and proper storage of foods. It is also important for the students to realize that sharing utensils or bites of food in the classroom is not acceptable, because many germs can be spread this way. The “**Fight Bac**” website is a good resource for food safety education materials and resources, at <http://www.fightbac.org>

Calcium and Health Q&A

Why is calcium so important for children?

Ninety-nine percent of the body’s calcium is present in bones and teeth. Because the bones continually grow and develop throughout childhood and young adulthood, it is important to have adequate dietary calcium in these bone-formative years. It is believed that peak bone mass has been reached by about age 30. After that, bones will not get much stronger and denser, but continued high calcium intake will help to maintain them.

The remaining 1% of the body’s calcium is present in the blood and body fluids. Calcium plays vital roles in nerve transmission, muscle contractions, blood clotting, maintenance of normal blood pressure, and as part of the “glue” that holds cells together.

Do most children get enough calcium in their daily diet?

Food surveys show that few youngsters take in enough calcium to maximize their lifetime bone development. At a time when they need calcium the most, kids are choosing soft drinks and other beverages over dairy products. While recent government recommendations advise a calcium intake of 1,300 milligrams for children ages 9–18 (800 milligrams for 4- to 8-year-olds), nutrition surveys show a decline in calcium intake for this age group, with fewer than half consuming the recommended amount each day (2).

Research conducted at the University of North Carolina at Chapel Hill (3) showed that energy intake from sweetened drinks in the United States increased 135 percent between about 1977 and 2001. Over the same span, energy intake from milk dropped 38 percent. “The largest drop in milk consumption, from 13.2 percent of total energy to 8.3 percent, occurred in 2- to 18-year-olds,” said Dr. Barry M. Popkin, lead researcher of the study.

How can children who are lactose intolerant or allergic to milk get enough calcium?

Lactose intolerance is the inability to properly digest lactose, a sugar that is present in milk. People who are lactose intolerant can often drink small amounts of milk at a time or may want to buy lactose-reduced dairy foods and lactase enzyme tablets. Yogurt with active cultures and aged cheeses are naturally low in lactose and normally are tolerated by lactose-sensitive individuals.

Milk allergy, on the other hand, requires complete avoidance of milk and dairy products because affected individuals are allergic to the protein in milk products. True allergies to milk are relatively uncommon, affecting approximately 1 to 3 percent of infants and young children. The good news is that the majority of children outgrow milk allergies as they get older.

Non-dairy sources of calcium include fish with bones (i.e., canned sardines and salmon), almonds, dark green vegetables such as broccoli and kale, and calcium fortified foods and beverages (e.g., calcium fortified soy or rice milk, calcium-set tofu, calcium fortified orange juice, calcium fortified bread and grain products).

Does dairy play a role in healthy body weight?

A small number of research studies have suggested that higher dairy-product consumption may be linked with lower body fat, but the results aren't conclusive. Other studies have shown no change or even an increase in body fat/weight if calories are excessive. More research is needed before dietary advice can be given. Even if it's confirmed that dairy products boost a weight loss effort, you still must keep calories in mind as you increase dairy choices in your diet. Dairy products should be part of a reduced-calorie weight management diet. Physical activity is important, too.

While further research is needed to understand fully the role of dairy foods in weight regulation, it's good to know that eating bone-building dairy products provides many important nutrients for a healthy diet.

References

1. *2005 Dietary Guidelines Advisory Committee Report*, <http://www.health.gov/dietaryguidelines/dga2005/report/>. Click on Section 6, "Selected food groups," and scroll to "Milk Products and Weight Management."
2. CSFII 1994-96, 1998 Data Set. Table set 17 (Food and Nutrient Intakes by Children 1994-96, 1998) Web site: <http://www.barc.usda.gov/bhnrc/foodsurvey/>, Accessed 07/05.
3. Nielsen, S.J. and B.M. Popkin. Changes in beverage intake between 1977 and 2001. *American Journal of Preventative Medicine*, 27(3):205-10, October 2004.
4. Weinberg, L.G., L.A. Berner, and J.E. Groves. Nutrient contributions of dairy foods in the United States, Continuing Survey of Food Intakes by Individuals, 1994-1996, 1998. *Journal of the American Dietetic Association*, 104(6):895-902, June 2004.

Helpful Websites

Ag in the Classroom

<http://www.agclassroom.org>

Dietary Guidelines for Americans 2005

<http://www.healthierus.gov/dietaryguidelines>

MyPyramid—The latest Food Guidance System from USDA, MyPyramid puts the *Dietary Guidelines for Americans 2005* into individualized meal plans for children and adults.

<http://mypyramid.gov>

Milk Matters—A nationwide campaign dedicated to increasing calcium consumption among America's children and teens

<http://www.nichd.nih.gov/milk>

Milk's Unique Nutrient Package

http://www.nationaldairycouncil.org/nationaldairycouncil/nutrition/products/Nutrients_in_Milk.pdf

National Dairy Council

<http://www.nationaldairycouncil.org> (then find a link to your local dairy council)

Nutrition Education Services/Oregon Dairy Council

<http://oregondairycouncil.org>

Oregon Agriculture in the Classroom, resource library loans

<http://aitc.oregonstate.edu>

Powerful Girls, Powerful Bones

<http://www.cdc.gov/powerfulbones/>

Universal Breakfast in Oregon

Universal Breakfast is served in more than 100 Oregon schools. “Universal” means that all breakfast meals are served at no charge—*free*—to all students in the school. This program is also called “Provisions,” and was enacted by Congress in an effort to reduce paperwork at the local level.

Besides reducing administrative burden, Universal Breakfast removes the free and reduced-price “stigma” surrounding school meals. Another very important benefit is the potential for improving academic outcomes of students.

For more information regarding Universal Breakfast, contact the Oregon Department of Education, Child Nutrition Programs, at 503-378-3600 ext. 2614.

The Food Stamp Program can help families buy nutritious foods. To find out more, call Oregon SafeNet at 1-800-SAFENET (723-3638) or (503) 988-5858 in the Portland metro area.